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EXAMINER

SELLERS, ROBERT E

ART UNIT

PAPER NUMBER

1712

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,620

Applicant(s)

HWANG ET AL.

Examiner

Robert Sellers

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1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-8 and 10-15 is/are pending in the application.
- 4a) Of the above claim(s) 1 and 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-7 and 10-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/31/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1. Claims 1 and 8 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on September 2, 2005.
2. The preliminary amendment filed June 6, 2003 incorporates a reference to parent application no. 09/619,102 without updating the status as U.S. Patent No. 6,617,023.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 3-7 and 10-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

3. The specification on page 1, lines 2-3; page 4, lines 11-12, page 7, lines 5 and 10; page 8, lines 20-21 and 23-24 and page 13, line 12 repeatedly refers to a "phosphorus- and nitrogen-containing resin hardener." The claimed formula for the hardener is limited to R^2 of the R^2HN - group being hydrogen. Such a structure precludes the phosphorus-containing moiety required in the specification on page 5, line 7 wherein it is stated that "at least one R^2 is not a hydrogen atom."

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4. There is no enablement for the claimed hardener in the absence of the phosphorus-containing moiety.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3-7 and 10-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claim 3 wherefrom claims 4-7 and 10-15 depend requires the hardener of the formula exhibited in withdrawn independent claim 1. The hardener is denoted as a "phosphorus- and nitrogen-containing resin hardener in claim 3, line 2, although the limitation of R^2 to hydrogen precludes any phosphorus-containing substituent.

6. Since claim 1 has been withdrawn, there is no explicit depiction of the formula for the nitrogen-containing hardener in dependent claim 3.

7. There is no clear line of demarcation in claim 4 between the polyglycidyl ethers of polyhydric phenols and the other glycidyl ethers except for the glycidyl ethers of nitrogen-containing hetero rings. The other species are derived from polyhydric phenols such that the metes and bounds of the polyhydric phenols are vague.

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8. There is no distinction between the polyglycidyl ethers of phenolics and the polyglycidyl ethers of polyhydric phenols because phenolics are polyhydric phenols. According to page 6, the fourth and fifth paragraphs of the specification, the polyglycidyl ethers of phenolics include polyglycidyl ethers of phenolic, cresol phenolic and bisphenol A phenolic.
9. More favorable consideration would be given to the description on page 6, the third paragraph of these polyglycidyl ethers as polyglycidyl ethers of phenolic resins such as phenolic resin polyglycidyl ether, cresol-phenolic resin polyglycidyl ether and bisphenol A-phenolic resin polyglycidyl ether.
10. Claim 4 would be more concisely denoted if the species are designated as diglycidyl ethers of bisphenols, diglycidyl ethers of biphenols, diglycidyl ethers of dihydroxybenzenes, polyglycidyl ethers of nitrogen-containing hetero rings, diglycidyl ethers of dihydroxynaphthalenes, polyglycidyl ethers of phenolic resins, and polyglycidyl ethers of polyhydric phenols. The terminology set forth on pages 5 and 6 should also be amended in accordance with the suggestion hereinabove for the sake of accuracy and consistency.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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Claims 3-7 and 10-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent No. 4-338691 (Japanese '691).

11. The abstracts for Japanese '691 disclose a printed circuit board prepared from a prepreg sheet for manufacturing a laminate which is lined with copper wherein the prepreg sheet is derived from a brominated phenol-salicylaldehyde epoxy resin, an R-substituted diaminotriazine (Japanese patent, page 1, col. 1) such as benzoguanamine (CAS registry no. 91-76-9 conforming to the claimed formula wherein R is phenyl) and from 0.01-0.3% by weight of imidazole (within the confines of claim 7 wherein the proportion range converts to from 0.005 to 5% by weight).

Claims 3-7 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent Nos. 8-231829 and 57-137318 (Japanese '829 and '318, respectively).

12. Japanese '829 (CAPLUS abstract) shows a casting formulation containing a bisphenol A diglycidyl ether, melamine and a calculated amount of 0.33% by weight of 1-cyano-2-ethyl-4-methylimidazole as a curing accelerator.

13. The abstracts for Japanese '318 report blends of a bisphenol A epoxy resin (CAPLUS abstract, AB, line 11, Epikote 815), a hardener of a melamine compound represented by formula I wherein R is the elected species of alkyl (CAPLUS abstract, AB, lines 2-3) and from 0.2-7 wt% (Derwent abstract, last line) of an imidazole reaction product.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-7 and 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent No. 8-295723 (Japanese '723), Takahashi et al. Patent No. 4,526,835; Great Britain Patent No. 1,133,564; the abstracts for Japanese Patent No. 61-246227 (Japanese '227) and German Patent No. 3,329,695 *in view of* Japanese '691 and '829.

14. Japanese '723 espouses a prepreg for a printed circuit board obtained from a polyimide, an epoxy resin and an elected species of acetoguanamine (CAPLUS abstract and registry no. 542-02-9).

15. Takahashi et al. (col. 2, line 64 to col. 3, line 38) discloses a multi-layer printed circuit board composed of a laminate formed from prepregs (col. 7, lines 21-25) comprising a polyimide, an epoxy resin such as a hydantoin epoxy resin (col. 5, line 6, within the limits of the glycidyl ethers of nitrogen-containing hetero rings of claim 4) and a s-triazine amine compound of formula (3) (col. 3, lines 19-38) such as 2,4-diamino-6-methyl-s-triazine (col. 5, line 46).

16. The British patent (page 2, lines 17-32) sets forth laminating and impregnating resins (page 4, lines 40 and 43) produced from a mixture of a cycloaliphatic polyepoxide and a triazine compound such as acetoguanamine or monoalkyl-melamines (page 2, lines 55-56).

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17. The abstracts for Japanese '227 show a composition of a bisphenol A epoxy resin, a guanamine compound of formula I (CAPLUS abstract) which includes acetoguanamine and benzoguanamine.

18. The German patent reports a laminate made from a prepreg of the elected species of triglycidyl isocyanurate and melamine (CAPLUS abstract, AB, line 4).

19. None of the references recite the claimed hardening promoter. Japanese '691 and '829 are described hereinabove. It would have been obvious to incorporate the imidazole compound of Japanese '691 and '829 into the compositions of Japanese '723, Takahashi et al., the British patent, Japanese '227 and the German patent in order to accelerator the cure rate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Sellers whose telephone number is (571) 272-1093. The examiner can normally be reached on Monday to Friday from 9:30 to 6:00. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).



Robert Sellers
Primary Examiner
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